

**The Mixed Layer in an Ocean General Circulation Model and its Effect on the Simulation of Bomb Radiocarbon**

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It has been shown that climate drift in coupled atmosphere-ocean models can be largely the result of the ocean general circulation model (OGCM) not being able to give the correct sea surface temperatures (SSTs). The poor accuracy of the simulated SSTs can be traced to the OGCM improperly mixing the incoming heat downwards, due to inadequate mixed layer physics. Better understanding and modeling of the mixed dynamics may thus help to improve SSTs and heat flux, thus reducing climate drift in coupled atmosphere-ocean models. The present study is a step in that direction.

In this study, two recent mixed layer models are incorporated into a widely used OGCM (a modified version of the GFDL Modular Ocean Model, MOM), and the results compared to a simulation with a constant mixed layer. Because a previous study showed that the uptake of bomb radiocarbon in this model is sensitive to the thickness of the mixed layer, results will be presented that illustrate the effects of the new mixed layer physics on the uptake of bomb radiocarbon.

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